

MEMO

TO: Steve Hebdon, Watermaster for Water District 29
Ken Andrus
McCammon Ditch Company

FROM: James Cefalo JRC

DATE: September 30, 2016

RE: Futile Call Determination on East Bob Smith Creek

In recent years, the Department has been contacted multiple times by Steve Hebdon, watermaster for Water District 29, about the implementation of futile call on East Bob Smith Creek. After speaking with all of the parties about the issue, I wondered if there might be a way to provide more certainty to the parties moving forward. For example would it be possible to devise a system that would simplify the determination of futile call in future years?

East Bob Smith Creek flows into the Portneuf River and, when connected to the river during the summer months, contributes to the water supply of McCammon Ditch Company ("McCammon"). Priority date curtailment on the Portneuf River often settles on McCammon's senior right (29-57: 6/11/1889, 50 cfs) during the irrigation season. In other words, in mid- to late-summer, water right 29-57 is only partially filled. Any excess water in the river would go to fill McCammon's senior water right.

Except for some minor stockwater rights, Ken Andrus ("Andrus") is the only water user on East Bob Smith Creek. Andrus diverts water from East Bob Smith Creek through a ditch a short distance to a pipeline intake. The Andrus Rights are as follows:

Water Right No.	Priority Date	Source	Diversion Rate	Acres
29-13401	7/6/1868	East Bob Smith Cr.	0.72 cfs	36
29-13399	5/1/1896	East Bob Smith Cr.	0.56 cfs	28
29-188	7/1/1902	East Bob Smith Cr.	0.80 cfs	40
29-187	7/2/1902	East Bob Smith Cr.	0.70 cfs	35
29-193	7/2/1902	East Bob Smith Cr. / Springs	1.00 cfs	50
29-11678	3/1/1903	East Bob Smith Cr.	3.00 cfs	150
29-191	11/1/1903	East Bob Smith Cr.	2.06 cfs	103
29-11681	8/7/1932	East Bob Smith Cr. / Springs	6.55 cfs	327.4
29-11679	3/15/1963	Springs	1.28 cfs	64
Combined Totals			6.55 cfs	327.4

The only Andrus water right senior to McCammon is water right 29-13401, which authorizes a diversion rate of 0.72 cfs. If McCammon's water right 29-57 is only partly filled because of a lack of water on the Portneuf River, and upper East Bob Smith Creek is (or could be) physically connected to the river, then Andrus must be cut back to a maximum diversion rate of 0.72 cfs. Andrus acknowledges that he is limited to a diversion rate of 0.72 cfs if East Bob Smith Creek is connected to the Portneuf River and McCammon's water right 29-57 is only partly filled.

The futile call issue arises as the creek flow declines over the summer. During the summer, upper East Bob Smith Creek (where the Andrus pipeline diversion is located) can become physically disconnected from lower East Bob Smith Creek and the Portneuf River. The creek channel would dry up entirely, even if Andrus were limited to his senior water right (0.72 cfs). At this point, the call for water on the Portneuf River becomes futile against upper East Bob Smith Creek, and Andrus would be able to take the full stream under his senior and junior water rights.

In recent years, the watermaster has required Andrus to cut back to a certain number of sprinkler heads (representing his senior water right 29-13401) for multiple days to see if upper East Bob Smith Creek connects to the lower, spring-fed part of the creek. Counting sprinkler heads is a rough way of estimating flow, particularly on the Andrus property where there is significant elevation differences across the property. Varying pressures, nozzle sizes, nozzle conditions and leaks in the pipe fittings can all create error in the flow estimate. Without a more accurate means of measurement, it is difficult to know whether Andrus is truly limited to 0.72 cfs during the futile call evaluation.

On September 19, 2016, I conducted a field exam of East Bob Smith Creek to better understand the dynamics of the system. I conducted a measurement of the creek upstream of the Andrus pipe intake. I measured approximately 1.2 cfs in the creek. The creek channel was 4 feet wide below the Andrus diversion. The distance between the Andrus diversion and the area where springs restore the flow in the creek is approximately 5,300 feet. Assuming a seepage rate of 2.55 feet per day (taken from the USGS soil identification tool), the estimated flow rate needed to overcome channel loss would be 0.62 cfs. The theoretical futile call breakpoint would be 1.34 cfs ($0.72 + 0.62$).

Recommendation

Because of the large variance in the stream channel profile and the thick vegetation down the stream channel corridor, it is difficult to calculate the channel loss between the Andrus diversion and the East Spring with any precision. I recommend conducting a formal measurement of the loss in the early summer when East Bob Smith Creek is flowing through the entire Andrus property. The stream should be measured in two locations: (1) Right below the Andrus pipeline diversion return flow and (2) Right above the East Spring. The measured loss between these points can then be established as the channel loss component. When the stream flow at the Andrus diversion drop below the critical level (Andrus's senior water right (cfs) + channel loss (cfs)), futile call is active and Andrus can divert all of the water. When the stream flow is greater than the critical level and McCammon's water right 29-57 is only partly filled, Andrus should be limited to his senior rights.

The watermaster should contact the Department in the 2017 irrigation season when conditions would be ideal to conduct the measurement of the channel loss.